

Appl. No. : 09/916,948
Filed : July 27, 2001

REMARKS

This paper is responsive to the December 10, 2002 Office Action. This application was originally filed with Claims 1-36. Claims 26-36 were canceled without prejudice in response to the September 12, 2002 Restriction Requirement. Thus, Claims 1-25 remain pending in this application.

Summary of Status of Pending Claims After Amendment Herein

In the foregoing list of claims, Applicants have amended Claims 6, 10, 13, 17, 19, 20 and 24. Claims 1-5, 7-9, 11-12, 14-16, 18, 21-23 and 25 remain as originally filed. In view of the foregoing amendments and the following remarks, Applicants respectfully submit that Claims 1-25 are patentably distinguished over the cited art, and Applicants respectfully request allowance of Claims 1-25.

Discussion of Amended Claim 14

Claim 14 originally depended from Claim 1. As noted by the Examiner in the December 10, 2002 Office Action, Claim 14 should have depended from Claim 12. Claim 14 is amended herein to depend from Claim 12 rather than from Claim 1. In view of the patentability of Claim 12, as discussed below, Applicants respectfully submit that amended Claim 14 is likewise patentably distinguished over the cited art, and Applicants respectfully request allowance of amended Claim 14.

Discussion of Amended Claim 19

During the preparation of this response, a minor grammatical error was noted in Claim 19. Claim 19 is amended herein to insert --the-- before "rotor core" in line 6. The scope of Claim 19 is not changed by this amendment. Claim 19 depends from Claim 1. In view of the patentability of Claim 1, as discussed below, Applicants respectfully submit that amended Claim 19 is likewise patentably distinguished over the cited art, and Applicants respectfully request allowance of amended Claim 19.

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Discussion of Amended Claims 6, 10, 13, 17, 20 and 24

In the December 10, 2002 Office Action, the Examiner objects to dependent Claims 6, 10, 13, 17, 20 and 24, but indicates that Claims 6, 10, 13, 17, 20 and 24 would be allowable if rewritten in independent form that included the limitations of the base claim and any intervening claims. Applicants have rewritten each of Claims 6, 10, 13, 17, 20 and 24 in independent form as follows.

Claim 6 originally depended from Claim 3, which depended from Claim 1. Claim 6 is rewritten herein to include the limitations of original Claims 1, 3 and 6.

Claim 10 originally depended from Claim 8, which depended from Claim 1. Claim 10 is rewritten herein to include the limitations of original Claims 1, 8 and 10.

Claim 13 originally depended from Claim 12, which depended from Claim 1. Claim 13 is rewritten herein to include the limitations of original Claims 1, 12 and 13.

Claim 17 originally depended from Claim 15, which depended from Claim 1. Claim 17 is rewritten herein to include the limitations of original Claims 1, 15 and 17.

Claim 20 originally depended from Claim 19, which depended from Claim 1. Claim 20 is rewritten herein to include the limitations of original Claims 1, 19 and 20. The limitations of amended Claim 20 included from Claim 19 are revised to correct the grammatical error discussed above with respect to Claim 19.

Claim 24 originally depended from Claim 1. Claim 24 is rewritten herein to include the limitations of original Claims 1 and 24.

In view of the Examiner's indication of allowability and in further view of the rewriting of Claims 6, 10, 13, 17, 20 and 24 in accordance with the Examiner's requirements, Applicants respectfully submit that amended Claims 6, 10, 13, 17, 20 and 24 are now in condition for allowance. Applicants respectfully request allowance of Claims 6, 10, 13, 17, 20 and 24.

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Discussion of Claims Rejected Under 35 U.S.C. § 103(a)

In the December 10, 2002 Office Action, the Examiner rejects Claims 1-5, 7-9, 11-12, 14-16, 18-19, 21-23 and 25 under 35 U.S.C. § 103(a) as being unpatentable over Applicants' Admitted Prior Art (AAPA) in view of U.S. Patent No. 6,225,725 to Itoh et al. ("Itoh").

Claims 1-5 and 7

With respect to Claims 1-5 and 7, the Examiner implies that AAPA discloses all the elements of the rejected claims except for positioning elements within the rotor core which prevent the core from moving under the influence of the magnetic field. The Examiner states that Itoh discloses a plurality of positioning elements (53) that are disposed on an outside circumference of the core and aligned with a plurality of second positioning elements (38). The Examiner cites column 6 at lines 3-18 of Itoh as stating that the positioning elements are press fitted between adjacent pole piece laminates to prevent displacement.

Applicants respectfully traverse the Examiner's rejection based on AAPA and Itoh because Itoh does not disclose the elements identified by the Examiner; Itoh cannot be combined with AAPA in any manner that would make Claims 1-5 and 7 obvious; as indicated by the Examiner's stated bases for the obviousness rejection, no combination of Itoh and AAPA would solve the problem solved by Applicants' claimed inventions.

Itoh does not disclose the elements identified by the Examiner

The Examiner states that "Itoh discloses a plurality of positioning elements (53) that are disposed on an outside circumference of the core and aligned with a plurality of second positioning elements (38)." The Examiner further states that "[t]hese positioning elements are press fitted between adjacent pole piece laminates thereby preventing displacement (column 6, lines 3-18)."

Contrary to the Examiner's description, Itoh does not disclose positioning elements disposed on an outside circumference of the core. Rather, each element (53) of Itoh is "a fitting recess 53 in between pole portion 51 and protrusion 52" on a pole piece 33 of the iron core 32 of

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a stator 30. The fitting recess 53 is formed within the stator core and is not on or near the "outer circumference" of the core.

Regardless of the position of the fitting recess 53, the fitting recess 53 is neither a first positioning element on a rotor core or a second positioning element on a die as those terms are used in the claims. Furthermore, the connecting metal 38 that fits into the recesses 53 is neither a second positioning element nor a first positioning element as those terms are used in the claims. As defined in Claim 1, the "first positioning element" of the rotor core engages the "second positioning element" of the die to prevent the rotor core from moving under the influence of a magnetic field applied to the resinous magnet in a slit to establish a magnetic orientation for the resinous magnet in each slit. In contrast, the non-magnetic connecting members 38 of Itoh are inserted into the recesses 53 to interconnect adjacent pole pieces 54 after the thin-wall bridge portions 55 are removed between adjacent pole pieces. The only engagement that occurs in Itoh is between the elements 38 and the recesses 53 in adjacent pole pieces in the stator. The connecting members 38 become a permanent part of the stator 30. Contrary to the Examiner's characterization of the two elements, there is no suggestion whatsoever that either the recesses 53 or the connecting members 38 are part of a die or that the elements engage to prevent the stator core from moving under the influence of a magnetic field applied to establish a magnetic orientation for a resinous magnet in a slit of the core. Rather, the "displacement" prevented by the elements 38, as cited in column 6 at lines 3-18 of Itoh, is a change in the spacing between adjacent pole pieces after the thin-wall bridges are cut.

Itoh cannot be combined with AAPA in any manner that would make Claims 1-5 and 7 obvious

AAPA describes a system in which a rotor core is placed between an upper die and a lower die of a metallic mold and a resinous magnet material is injected into slits in the rotor core. The resinous magnet material is magnetically orientated by permanent magnets disposed in the lower die along the outer circumference of the rotor core. The magnetic fields of the permanent magnets may cause rotation of the rotor core within the metallic mold, which may result in defective filling of the resinous magnet within the slits.

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Itoh does not disclose any elements that can be combined with AAPA. There is no apparent location in either the mold or the rotor core of AAPA into which the Itoh recesses 53 can be formed. Similarly, there are no recesses or other portions of the mold or the rotor core of AAPA to receive the Itoh connecting members 38. The Examiner has identified two elements in Itoh that are used to provide permanent connections between adjacent pole pieces of a stator; however, the Examiner has not suggested how either element or both elements could be used with AAPA to obtain the inventions defined in Claims 1-5 and 7. At a minimum, the Examiner must indicate how the two elements of Itoh could be combined with AAPA to obtain the claimed inventions and must show how the proposed combination is suggested in the art. Itoh does not disclose a rotor core, does not disclose a die into which a rotor core is inserted, does not disclose slits in the rotor core for receiving resinous magnet, and does not disclose the application of a magnetic field to a resinous magnet. Thus, there is no suggestion whatsoever in Itoh as to how the two elements could be combined with the elements of AAPA to obtain Applicants' claimed inventions.

No combination of Itoh and AAPA would solve the problem solved by the claimed inventions


The Examiner has not suggested how the elements of Itoh could be incorporated into AAPA to obtain a new combination of elements. Even if Itoh were to be combined with AAPA in some manner related to the structure of Itoh, then the resulting combination would not provide a solution to the problem solved by Applicants' claimed inventions. As support for the contention that it would be obvious to combine Itoh with AAPA to obtain Applicants' claimed invention, the Examiner states:

These positioning elements are advantageous in that they ensure the uniformity of the core, which is essential for obtaining optimum performance. It is well known that a uniform air gap between the stator and rotor cores has a profound impact on the motor performance (i.e. efficiency, noise, etc.).[.] With the use of such positioning elements the geometry of the rotor & cores can be maintained allowing for a uniform air gap between the two cores which is critical for the motor performance. Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to form a rotor core within a die, filling the slits with [a] resinous magnet as disclosed by AAPA while using

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positioning elements on an outer circumference as taught by Itoh, in order to realize the advantages discussed above.

Applicants respectfully submit that the foregoing statements in support of the obviousness rejection have no relevance to Applicants' claimed inventions. The Examiner's statements suggest that Itoh solves a problem entirely different from the problem addressed by Applicants' claimed invention. In particular, the foregoing statements are directed to the advantageous use of Itoh's positioning elements to "ensure the uniformity of the core." The Examiner states that the positioning elements allow the geometry of the rotor and stator cores to be maintained (e.g., the positions of the pole pieces with respect to each other are fixed by the connecting members 38 inserted into the recesses 53) to allow for "a uniform air gap between the cores which is critical for the motor performance."

 Applicants' claimed inventions are not directed to the maintenance of a rotor or stator geometry to allow for a uniform air gap between a stator and a rotor. None of Applicants' claims are directed to a stator or to any relationship between the rotor and a stator. Rather, Applicants' claims are directed to a method of fixing a rotor core within a die so that the rotor does not move when magnetic fields are applied to the resinous magnets in the rotor. The elements used to maintain the uniformity of the positions of the pole pieces in Itoh have no bearing on the positioning of a core with respect to the die while resinous magnet is being injected and magnetically orientated. The advantages of Itoh praised by the Examiner have no relevance to the claimed inventions because Claims 1-5 and 7 are not directed to maintaining a uniform air gap between a stator and a rotor.

In view of the foregoing, it can be readily seen that the Examiner's summary statement that it would be obvious to combine AAPA with Itoh "in order to realize the advantages discussed above" provides no support whatsoever for the obviousness rejection.

Since the Examiner's rejection of the claims under 35 U.S.C. § 103(a) are not supported by Itoh or by the Examiner's stated bases for the rejection, Applicants respectfully request the Examiner to withdraw the rejection of Claims 1-5 and 7 under 35 U.S.C. § 103(a) based on the asserted combination of AAPA and Itoh.

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Claims 8, 9, 11, 12, 14-16, 18-19, 21 and 25

With respect to Claims 8, 9, 11, 12, 14-16, 18-19, 21 and 25, the Examiner states that the various positioning elements defined in the claims are all obvious matters of design choice because Applicants have not disclosed that any features solve any stated problem or are for any particular purpose. The Examiner further states that the invention would perform equally well with the positioning elements of Itoh. The Examiner further states that by arguing that the positioning element configurations are patentably distinct and are not design choices, Applicants would be subject to a species restriction.

Applicants respectfully traverse the Examiner's rejection of Claims 8, 9, 11, 12, 14-16, 18-19, 21 and 25. Each of Claims 8, 9, 11, 12, 14-16, 18-19, 21 and 25 depends directly or indirectly from Claim 1. As discussed above, Claim 1 is patentably distinguished over the proposed combination of AAPA and Itoh. Thus, Claims 8, 9, 11, 12, 14-16, 18-19, 21 and 25 are patentably distinguished over AAPA and Itoh for at least the same reasons. In addition, each of Claims 8, 9, 11, 12, 14-16, 18-19, 21 and 25 defines a first positioning element formed as part of the rotor core and a second positioning element formed as part of the die. As discussed above, Itoh does not disclose any elements that are used to hold a rotor core in a fixed position with respect to a die while resinous magnets in the rotor core are being magnetically orientated by an applied magnetic field. Thus, each of Claims 8, 9, 11, 12, 14-16, 18-19, 21 and 25 defines further aspects of the invention defined in Claim 1 that are also not found in any combination of AAPA and Itoh.

In view of the foregoing, Applicants respectfully request the Examiner to withdraw the rejection of Claims 8, 9, 11, 12, 14-16, 18-19, 21 and 25 under 35 U.S.C. § 103(a) as being unpatentable over AAPA and Itoh.

Summary

Having amended Claims 6, 10, 13, 17, 19, 20 and 24 herein, and having submitted the foregoing arguments in support of the patentability of Claims 1-25, Applicants respectfully

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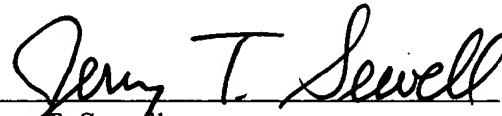
submit that Claims 1-25 are now in condition for allowance, and Applicants respectfully request allowance of Claims 1-25.

Request for Telephone Interview

If there is any further impediment to the prompt allowance of all the claims pending in the present application that can be resolved by a telephone interview, Applicants respectfully request the Examiner to call the undersigned attorney of record at 949-721-2849 or at the general office telephone number listed below.

Respectfully submitted,
KNOBBE, MARTENS, OLSON & BEAR, LLP

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